

Idaho 8th Grade Direct Mathematics Assessment

2004 8th GRADE MAIN RANGEFINDER 3

Proficient Application of Basic Skills

It is important that you show or explain how you solved the problems on this assessment. If you use a calculator, show how you set up the math.

1. Shauna has scores of 68, 92, 96, 78, 100, 93, and 86 on her math tests so far this semester.

<u>GRADE SCALE</u>	
A =	90 and above
B =	80 – 89
C =	70 – 79
D =	60 – 69

- a. If Shauna's father gives her \$5.00 for every A, \$2.00 for every B, nothing for a C, and Shauna must give her father \$1.00 for every D, how much money would she have from this? Show or explain how you found your answer.

$$\begin{array}{r}
 100 = \$5.00 \\
 96 = \$5.00 \\
 93 = \$5.00 \\
 92 = \$5.00 \\
 \hline
 68 = 2.00 \\
 78 = 2.00 \\
 64 = 1.00 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 + 5 \\
 5 \\
 5 \\
 5 \\
 \hline
 22 \\
 \end{array}
 \quad
 \begin{array}{r}
 22 \\
 \hline
 21
 \end{array}$$

\$21 earned

- b. What is her average (mean) test score and letter grade? Show or explain how you found your answer.

$$\begin{array}{r}
 68 \\
 + 92 \\
 + 96 \\
 + 78 = \\
 + 100 \\
 \hline
 613
 \end{array}$$

$$\begin{array}{r}
 68 \\
 71 \\
 19 \\
 28 \\
 57 \\
 \hline
 613
 \end{array}
 \quad
 \begin{array}{r}
 22 \\
 \hline
 21
 \end{array}$$

Round = 88 is her mean score which is a B

- c. Shauna's lowest score is what percentage of her total points? Show or explain how you found your answer.

Well-Defined Structure

$$\begin{array}{r}
 110929153 \\
 64 \overline{)613} \\
 \end{array}
 \quad
 \begin{array}{l}
 \text{move} \\
 \text{the decimal 2 places} \\
 \text{to the right and you get } 11\%
 \end{array}$$

- d. If one more 100-point test is given, what would be her highest possible average (mean)? If two more 100-point tests are given, what would be her highest possible average (mean)? Show or explain how you found your answer.

$$\begin{array}{r}
 713 \\
 + 100 \\
 \hline
 813
 \end{array}
 \quad
 \begin{array}{l}
 \text{add the} \\
 \text{total plus} \\
 \text{two hundred and divide}
 \end{array}$$

90.333... Round to 90%

$$\begin{array}{r}
 613 \\
 + 100 \\
 \hline
 713
 \end{array}
 \quad
 \begin{array}{l}
 89.125 \text{ Round = 89 \%} \\
 \text{add 100} \\
 \text{to the total} \\
 \text{then divide by 4}
 \end{array}$$

Effective Problem-Solving Strategies

Read problems 2, 3, 4, and 5 on this and the next two pages. Select three problems to answer. Answer ALL of the parts of the three problems you select to answer. Cross out the one problem that you do not choose to answer.

2. Given the following sequence: $\begin{array}{ccccccc} & 3 & & 5 & & 7 & \\ & \downarrow & & \downarrow & & \downarrow & \\ 1, & 4, & 9, & 16, & \dots \end{array}$

- a. Find the next three terms (numbers) in the sequence.

25, 36, 49

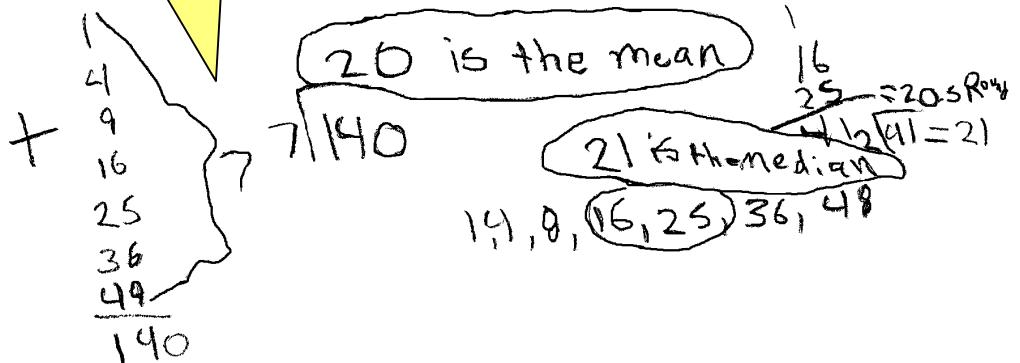
Effective Communication Skills

- b. What is the relationship between the numbers? Show or explain the pattern.

They each have a difference of an odd number
from least to greatest starting with 3

Occasional Computational or
Surface Errors

- c. Find the mean and median of the seven numbers. Show or explain how you found your answer.



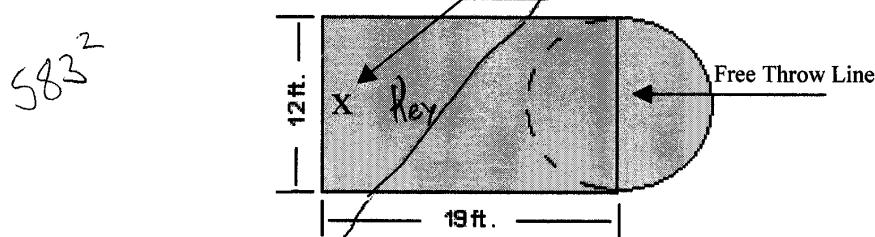
- d. Find the probability of selecting an odd number from the seven numbers. Show or explain how you found your answer.

1
4
9
16
25
36
49

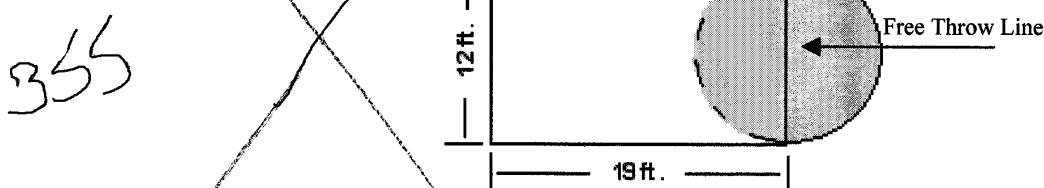
$\frac{4}{7}$ You have 4 odds
out of 7 all together

3. In the game of basketball, the "key" is the rectangular area underneath the basket. A school has decided to paint the key and the semicircle adjacent to and outside of the free throw line with the school's colors. The dimensions of the key are 12 ft by 19 ft as shown in the diagram.

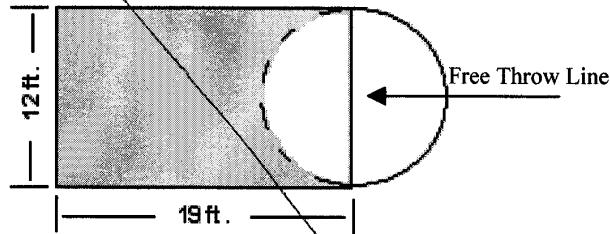
- a. What is the total area to be painted (key and semicircle)? (Circle Area Formula: $A = \pi r^2$)
Show or explain how you found your answer.



- b. The school will paint the circle orange that has the free throw line as the diameter. What is the area that needs to be painted orange? *Show or explain how you found your answer.*



- c. The remaining area of the key is to be painted black. What is the area that needs to be painted black? *Show or explain how you found your answer.*



- d. The cost of the paint is \$2.50 per sq. ft. of coverage. How much would it cost to paint the key and the adjacent semicircle? *Show or explain how you found your answer.*

4. Suppose you plan to work 3 hours after school each Monday, Wednesday, and Friday, and 6 hours each Saturday. Suppose you will earn x dollars per hour.

- a. Write an expression that represents your weekly earnings. *Show or explain how you found your answer.*

add three for each week day you worked
which is 3

then add the 6 hrs for Saturday

- b. If you earn \$5.25 per hour, how much money will you earn each week? *Show or explain how you found your answer.*

Understanding of Situations

$$9 \cdot 5.25 = \$47.25$$

$$+ 431.56$$

$$\hline 6 \cdot 5.25 = \$78.75 = \text{1 week's earnings}$$

- c. If 25% of your weekly check in part b is deducted for taxes, how much will you pay in taxes each week? *Show or explain how you found your answer.*

$$.25 \cdot 78.75 = 19.6875$$

Round
to \$19.50

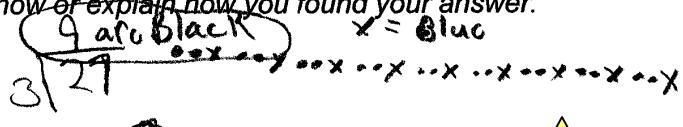
$$19.50$$

Appropriate Processes

5. An art teacher has a box of 36 markers on his desk that are black, red, green, blue, and purple.

- a. If 25% of the markers are blue and $\frac{1}{3}$ of the markers are black, how many markers are blue and how many markers are black? *Show or explain how you found your answer.*

$$\begin{array}{r} 2 \\ \times 25 \\ \hline 50 \\ - 9 \\ \hline 27 \end{array} \quad 25\% \leftarrow 9 \text{ are blue}$$



- b. If there are an equal number of red, green, and purple markers, how many green markers are in the box? *Show or explain how you found your answer.*

$$\begin{array}{r} 3 | 36 \\ 3 | 12 \\ \hline 4 \end{array} \quad \begin{array}{r} 6 \\ 18 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ 6 \end{array}$$

total markers
- the Blue and Black
 $= 18$ 6 out of 18
are green

- c. If Johnny reaches into the box and grabs one marker without looking, what is the probability that the marker will be blue or red? *Show or explain how you found your answer.*

There
are 36 all
together and 6 Red

$$\frac{6}{36} = \frac{3}{18} = \frac{1}{6}$$

Limited Understanding of Situations